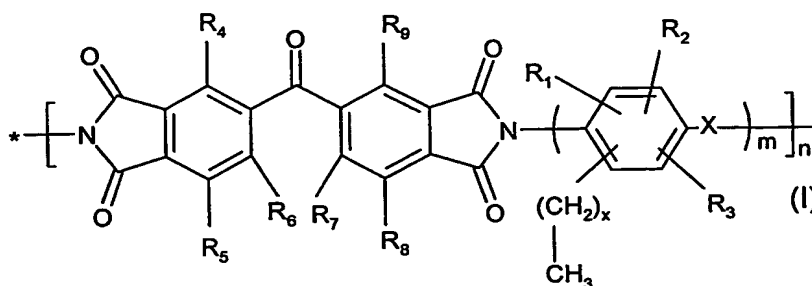


## CLAIMS

1. An optical waveguide comprising:

a) a support layer;

b) a core layer including a cross-linked polymeric material obtained by UV irradiation of a polyimide having repeating units of formula (I)



wherein  $R_1$ ,  $R_2$ , and  $R_3$  independently represent hydrogen or a  $(C_1-C_6)$ -alkyl group,

$R_4$ ,  $R_5$ ,  $R_6$ ,  $R_7$ ,  $R_8$  and  $R_9$  independently represent hydrogen, a  $(C_1-C_6)$ -alkyl group, a  $(C_1-C_6)$ alkenyl or an aryl group;

$X$  is selected from a covalent bond; a  $(CH_2)_y$  group, wherein  $y$  is an integer from 1 to 10; O; S; NR, wherein R is  $(C_1-C_4)$ alkyl,

$x$  is 0-5,

$m$  is 1-10

$n$  is an integer having an average value of from 5 to 50,000,

and the deuterated derivatives thereof.

2. Optical waveguide according to claim 1 wherein  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  independently represent hydrogen or a  $(C_1-C_3)$ alkyl group.

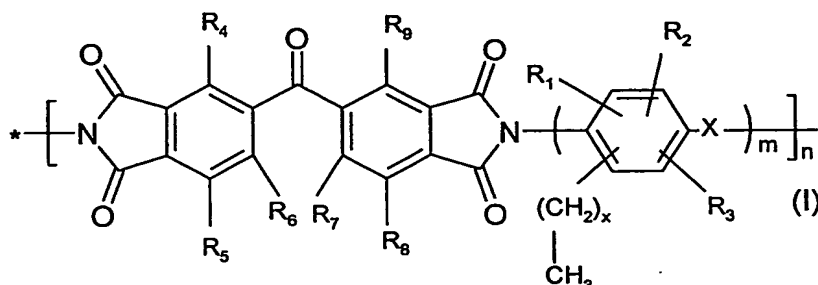
3. Optical waveguide according to claim 1 wherein said support has a refractive index lower than that of said cross-linked polymeric material.

4. Optical waveguide according to claim 1 wherein said support layer is a glass layer.

5. Optical waveguide according to claim 1 comprising a cladding layer disposed over said core layer on the opposite side of that of the support layer.

6. Method for producing an optical waveguide comprising the steps of

a) spin-coating a polyimide of general formula (I)



wherein  $R_1$ ,  $R_2$ , and  $R_3$  independently represent hydrogen or a (C<sub>1</sub>-C<sub>6</sub>)alkyl group,

$R_4$ ,  $R_5$ ,  $R_6$ ,  $R_7$ ,  $R_8$  and  $R_9$  independently represent hydrogen, a (C<sub>1</sub>-C<sub>6</sub>)alkyl group, a (C<sub>1</sub>-C<sub>6</sub>)alkenyl or an aryl group;

X is selected from a covalent bond; a (CH<sub>2</sub>)<sub>y</sub> group, wherein y is an integer from 1 to 10; O; S; NR, wherein R is (C<sub>1</sub>-C<sub>4</sub>)alkyl,

x is 0-5,

m is 1-10

n is an integer having an average value of from 5 to 50,000,

and the deuterated derivatives thereof,

on a substrate layer to obtain a film of the polyimide of formula (I);

b) irradiating the film with UV radiation according to a selected pattern.

7. Method according to claim 6 comprising the step of spin-coating a cladding layer over the core layer.